

## CLAIMS

What is claimed is:

1. A tarnish inhibiting composition effective to protect a surface of a silver object containing in excess of 90% silver, when the surface is exposed to the composition in a sealed environment, against tarnishing in a molecular-oxygen containing atmosphere containing in the range from 1 ppb (parts per billion) to 10 ppm (parts per million) of hydrogen sulfide at a relative humidity of 90% and 37.4°C (100°F), for at least one year, the composition consisting essentially of a substantially non-hydrolyzable polymer having substantially homogeneously dispersed therein from about 0.01 % to 5 % by weight of an essentially anhydrous scavenger selected from the group consisting of an alkali metal silicate and zinc oxide, in combination with from 0 to 1 % of an inert adjuvant, provided that the polymer has a water vapor transmission rate (WVTR) at least as high as that of low density polyethylene.
2. The composition of claim 1 wherein the polymer is selected from the group consisting of low density polyethylene, polypropylene, copolymers of lower C<sub>2</sub> - C<sub>8</sub> olefins, copolymers of a lower C<sub>2</sub> - C<sub>8</sub> olefin and ethylene/vinyl alcohol, non-biodegradable polyester, poly(vinyl chloride), polystyrene, polyamide, and a biodegradable polyester having a WVTR higher than about 1.5 gm/24 hr measured per 0.025 mm (mil) thickness and 645 cm<sup>2</sup> (100 in<sup>2</sup>) area at 37.4°C (100°F) and 90% RH (relative humidity).
3. The composition of claim 2 wherein the biodegradable polyester is selected from the group consisting of star ε-caprolactone, ε-caprolactone (PCL); poly(hydroxybutyrate-co-valerate) (PHBV), containing 8, 16 and 24% valerate; uncoated- and nitrocellulose-coated cellophane films; crosslinked chitosan; starch/ethylene vinyl alcohol (St/EVOH) blend films; pure EVOH film (38 mole percent ethylene); and polycaprolactone (PCL), molecular weight about 80,000 Daltons.

4. The composition of claim 1 wherein the alkali metal silicate is a silicate of sodium and the adjuvant is selected from the group consisting of fumed silica and calcium carbonate present in an amount in the range from 0.01% to 1 % by weight.
5. The composition of claim 2 wherein the composition is transparent, and  
5 the scavenger and the adjuvant have a primary particle size in the range from about 1  $\mu\text{m}$  to 53  $\mu\text{m}$  and are substantially homogeneously dispersed in the polymer.
6. An article of arbitrary size and shape made of substrate polymer consisting essentially of a synthetic resin having substantially uniformly dispersed therein a scavenger selected from the group consisting of zinc oxide and a silicate of an alkali  
10 metal, each present in an amount from 0.01 to 5 % by weight of the polymer; and from 0.0 to 1% of an inert adjuvant wherein the scavenger and adjuvant each have a primary particle size in the range from 1  $\mu\text{m}$  to 53  $\mu\text{m}$ , and the resin has a water vapor transmission rate (WVTR) which is substantially the same as that of the resin without the scavenger and adjuvant.
- 15 7. The article of claim 6 wherein the film is of a lower olefin having from 2 to 8 carbon atoms, the film having smooth upper and lower surfaces, and a thickness in the range from 0.0125 mm ( 0.5 mil, or 0.0005") to 0.125 mm (0.005" or 5 mil); and, the inert adjuvant is an inorganic dispersant selected from the group consisting of fumed silica and calcium carbonate.
- 20 8. A method of protecting a silver object from tarnishing in a tarnishing atmosphere, comprising,  
placing the object in a container formed from a thermoformable synthetic resin having substantially uniformly dispersed therein solid particles of a scavenger selected from the group consisting of zinc oxide and a silicate of an alkali metal, each present in  
25 an amount from 0.01 to 5 % by weight of the resin, and from 0.0 to 1% of an inert adjuvant, each having a primary particle size in the range from 1  $\mu\text{m}$  to 53  $\mu\text{m}$ , and the

resin has a water vapor transmission rate (WVTR) which is substantially the same as that of the resin without the scavenger and adjuvant.